FUTURE SEA LEVEL RISE AND THE MEADOWLANDS

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The tidal fringe brackish marshes of the Meadowlands were formed as a result of post-glacial sea level rise. Continued sea level rise, no matter the cause, will continue to affect the distribution, structure and function of these coastal ecosystems. These marshes maintain their stability relative to the tide through a combination of the accumulation of organic matter and periodic inputs of sediments from storms. However, even under accelerated sea level rise, research has shown that this type of coastal ecosystem will be able to maintain suitable conditions for vegetative growth if hydrologic conditions allow natural sediment accretion processes to continue.

One of the foremost steps needed to successfully manage and protect the environmental, recreational, and economic resources and investments along the shorelines of the Meadowlands is to recognize and understand the complex causes and dynamic processes related to sediment accretion, including the ensuing ecological change in state and function in the face of sea level rise. However, sediment accretion processes within the Meadowlands have yet to be modeled and are not well understood.

This presentation will describe a theoretical model developed as a decision tool to evaluate potential impacts of sea level rise on sedimentation patterns and sediment accretion across a variety of vegetative coastal habitats in the Meadowlands. The model is applied to a potential restoration site in the Meadowlands to investigate the potential effects of restoration efforts on future sea level rise changes.